

Cell-Vive™ GMP Recombinant Human IL-7 (carrier-free)

Catalog# / Size	581914 / 25 µg 581916 / 100 µg
Other Names	Interleukin 7, Lymphopoietin-1 (LP-1), IL7
Description	<p>IL-7 was initially described as a stromal derived factor which is capable of inducing the growth of pre-B cells in vitro. IL-7 acts on a variety of cells through its receptor (IL-7R), a heterodimer consisting of IL-7Rα (CD127) and a common γ chain (CD132, γc) shared by other cytokine (IL-2, IL-4, IL-9, IL-15, and IL-21) receptors. In addition, IL-7Rα is shared with TSLP. The generation of IL-7-deficient and IL-7Rα-deficient mice and monoclonal antibody blocking experiments confirmed the requirement of IL-7 for B-cell development in mice. Nevertheless, mutations in the α chain of the IL-7 receptor in patients with severe combined immunodeficiency (SCID) confirmed that IL-7 is indispensable for T-cell development in humans. However, the presence of B cells in these individuals suggests important differences between the role of IL-7 in murine and human lymphocyte development. Thus, although human B-cell development does not appear to require IL-7, immature human B cells do proliferate in response to IL-7. Nevertheless, most recent information suggests that IL-7 dependence in human lymphopoiesis increases during the progression of ontogeny in cord blood and bone marrow. IL-7 can be associated to hepatocyte growth factor (HGFβ) to form a hybrid cytokine (IL-7/HGFβ), which induces greater proliferation of CFU-S, SLPs, and pre-pro-B cells than does native IL-7. The hybrid cytokine signals through both IL-7R (IL-7Rα plus γc) and c-Met. IL-7 has a thymic antiapoptotic effect and induces the expression of antiapoptotic proteins Bcl-2 and Mcl-1 and the inhibition of proapoptotic proteins Bax and Bad. In addition, IL-7 is a key regulator of glucose uptake in T lymphocytes. TGF-β has been shown to down-regulate IL-7 mRNA and protein secretion from human bone marrow stromal cells. In addition, TGF-β inhibits IL-7-induced proliferation of pre-B cells.</p>

Quality Statement	<p>BioLegend Cell-Vive™ GMP Recombinant proteins are manufactured and tested in accordance with USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and Ph. Eur. Chapter 5.2.12 in a dedicated GMP facility compliant with ISO 13485:2016. Specifications and processes include:</p> <ul style="list-style-type: none">• Low endotoxin level (≤ 0.1 EU/μg)• Purity ($\geq 95\%$ or higher)• Bioburden testing• Mycoplasma testing• Batch-to-batch consistency• Vendor qualification• Raw material traceability and documentation• Documented procedures and employee training• Equipment maintenance and monitoring records• Lot-specific certificates of analysis• Quality audits per ISO 13485:2016• QA review of released products
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Product Details

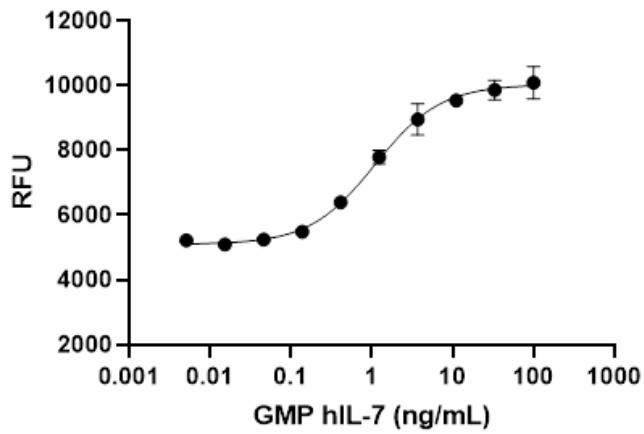
Source	Human IL-7, amino acids Asp26-His177 (Accession # NP_000871.1) was expressed in 293E cells.
Molecular Mass	The 165 amino acid recombinant protein has a predicted molecular mass of approximately 18.8 kD. The DTT-reduced and non-reduced protein migrate at approximately 20 - 30 kD by SDS-PAGE. The C-terminal contains an 8His-(TG8HGGQ)-tag.
N-terminal Sequence Analysis	Asp-(Cys)-Asp-Ile-Glu-Gly-Lys-Asp-Gly-Lys-Gln-Tyr-Glu-Ser-Val
Purity	$\geq 95\%$, as determined by Coomassie stained SDS-PAGE
Formulation	0.1 μ m filtered protein solution is in PBS, pH 7.2.
Endotoxin Level	Less than or equal to 0.1 EU per μ g protein as determined by the LAL method

Residual Host Cell Protein Content	≤ 0.500 ng/μg by ELISA
Concentration	500 μg/mL
Storage & Handling	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at -20°C for up to six months, or at -70°C or colder until the expiration date. For maximum results, quick spin vial prior to opening. The protein can be aliquoted and stored at -20°C or colder. Stock solutions can also be prepared at 50 - 100 μg/mL in appropriate sterile buffer, carrier protein such as 0.2 - 1% endotoxin-free BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to one week or stored at -20°C or colder for up to 3 months. Avoid repeated freeze/thaw cycles.
Activity	ED ₅₀ = 0.2 – 1.2 ng/mL, as determined by a dose-dependent stimulation in a proliferation assay with PHA-activated human peripheral blood lymphocytes (PBL). Deep Blue Cell Viability™ Kit (Cat. No. 424701) is used to measure the proliferation. The specific activity of Cell-Vive™ GMP Recombinant Human IL-7 (carrier-free) is >1 x 10 ⁸ IU/mg when compared against the WHO International Standard for Human IL-7 (NIBSC code: 90/530).
Application	Bioassay Cell Culture
Application Notes	BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our 100% satisfaction guarantee . If you have any concerns, contact us at tech@biolegend.com .
Disclaimer	BioLegend Cell-Vive™ GMP Recombinant proteins are for research use only. Suitable for <i>ex vivo</i> cell processing. Not for injection or diagnostic or therapeutic use. Not for resale. BioLegend will not be held responsible for patent infringement or other violations that may occur with the use of our products.

Antigen Details

Distribution	IL-7 is produced by epithelial cells in thymus, bone marrow, and intestine. Additional sites of IL-7 production include epithelial goblet cells, keratinocytes, fetal liver, adult liver, dendritic cells, skeletal muscle cells, fibroblastic reticular cells, and follicular dendritic cells.
Function	IL-7 induces proliferation of human immature B cells, and it is critical for T-cell development and peripheral T-cell homeostasis. Regulates T follicular helper cells.
Interaction	B cells, Hematopoietic stem and progenitors
Ligand/Receptor	IL-7Rα (CD127), common gamma chain (γc or CD132)
Bioactivity	Measured by its ability to induce proliferation of 7TD1 cell
Cell Type	B cells, Dendritic cells, Epithelial cells, Leukemia, Lymphocytes, NK cells, T cells, Tfh, Thymocytes
Biology Area	Cell Biology, Cell Proliferation and Viability, Immuno-Oncology, Immunology, Stem Cells
Molecular Family	Cytokine/Chemokine Receptors, Cytokines/Chemokines
Antigen References	<ol style="list-style-type: none"> 1. Park LS, <i>et al.</i> 1990. <i>J. Exp. Med.</i> 171:1073. 2. Fry TJ and Mackall CL. 2002. <i>Blood</i> 99:3892. 3. Lai L, <i>et al.</i> 2006. <i>Blood</i> 107:1776. 4. Link A, <i>et al.</i> 2007. <i>Nat. Immunol.</i> 8:1255. 5. Wofford J, <i>et al.</i> 2008. <i>Blood</i> 111:2101. 6. Parrish YK, <i>et al.</i> 2009. <i>J. Immunol.</i> 182:4255. 7. Saini M, <i>et al.</i> 2009. <i>Blood</i> 113:5793. 8. Guimond M, <i>et al.</i> 2009. <i>Nat. Immunol.</i> 10:149.
Gene ID	3574

Product Data



GMP recombinant human IL-7 induces proliferation of PHA-activated human peripheral blood lymphocytes (PBL) in a dose-dependent manner with an ED₅₀ range of 0.2 - 1.2 ng/mL.

For Research Use Only. Suitable for *ex vivo* cell processing. Not for injection or diagnostic or therapeutic use.

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